

TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate No:
MERB00003AN
Revision No:
0

This Certificate is issued by DNV UK Limited based on authorisation of the Maritime & Coast Guard Agency (MCA) as an UK Approved Body to undertake conformity assessments on marine equipment in accordance with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 as amended.

This is to certify:

That the Rudder angle indicator

with type designation(s)
DEIF Rudder Angle Indicator System

Issued to
DEIF A/S
Skive, Denmark

is found to comply with the requirements in the following Regulations/Standards:
Regulation **MSN 1874 Amendment 6**,
item No. **UK/4.20. SOLAS 74 as amended, Regulations V/18, V/19 & X/3, IMO Res. A.694(17), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. MSC.191(79), IMO Res. MSC.302(87)**

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2025-03-22**.

Issued at **London** on **2022-11-09**

DNV local unit:
Denmark CMC



for **DNV UK Ltd.**

Approval Engineer:
Jörg Rebel

Approved Body No.: **0097**

Christine Mydlak-Röder
MER Service Responsible



**Maritime &
Coastguard
Agency**

UK Approved Body Authorised
by the MCA

The Mark of Conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-control phase module (D, E or F) of Schedule 2 of the Merchant Shipping (Marine Equipment) Regulations 2016, as amended is fully complied with and controlled by a written inspection agreement with an approved body. The product liability rests with the manufacturer or his representative in accordance with the Merchant Shipping (Marine Equipment) Regulations 2016.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV UK Ltd. of any changes to the approved equipment. Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply. This certificate remains valid unless suspended, withdrawn, re-called, or cancelled.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

The Rudder Angle Indicator System consists of the following equipment:

Analogue system components:

Indicators: XL72, XL96, XL144, XL192, TRI-2, BRW-2, BW144, BW192, XDi96, XDi144, XDi192

Feedback Unit: RT-2, RTA602, Sakae SFSCB30A, Sakae FSCB30AG, Volvo Penta IPS 3

Interface Unit: DC/DC Amplifier: TDG-210, WAGO 857-409, AX1 analogue module

CAN system components:

Indicators: XL72, XL96, XL144, XL192, BRW-2, BW144, BW192, TRI-2 CAN, XDi96, XDi144, XDi192

Feedback Units: Contelec Vert-X 515x CANopen/Vert-X 37 CANopen, FSG MH620-II/MU, Dr. Horn EDG 50.42/72, RTC300, RTC600

Optional: XDi extension modules AX1 analogue, DX1 digital, NX1/NX2 serial

Software versions: XDi D & M platform 1: 1.0x.x and XDi D, M & N platform 2: 2.0x.x,

AX1 Modul: 1.0x.x,

DX1 Modul: 1.0x.x,

NX1/NX2 Modul: 1.0x.x

Application/Limitation

WAGO 857-409 Amplifier not to be used in locations of bridge and open decks.

Type Examination documentation

| DNV No | Document Id. | Rev. | Description |
|--------|-----------------|------------|--|
| 58 | 4198350064B | B | Rudder system MED approval matrix |
| 57 | GS0067 + GS0068 | 2020-02-24 | Report: GS0067_GS0068_MED test_IPS3_xDi_XL |
| 53 | 2P00115-01 | 2020-02-06 | Report: Dry Heat_IPS3 |
| 52 | 2P00115 | 2020-02-13 | Report: Burst and Radiated 6 GHz_IPS3 |
| 50 | PX20946 | 2012-03-22 | Report: Environmental Test Report, IPS3 |
| 49 | PX20946 | 2012-03-19 | Report: EMC Report, IPS3 |
| 36 | 4910215100H | 2017-10-30 | Report: 15A - High Voltage Test, Sakae potmeter |
| 35 | 4910215100H | 2017-10-30 | Report: 14A Insulation resistance, Sakae potentiometer |
| 34 | 4910214100i | 2017-11-10 | Report: 9A Vibration Test, Sakae potentiometer |
| 33 | 4910213115G | 2017-10-20 | Report: 6A Damp Heat test Marine, Sakae potentiometer |
| 32 | 4910213105G | 2017-10-12 | Report: 4A Dryheat Test, Sakae potentiometer |
| 31 | 4910213100G | 2017-10-13 | Report: 3A Cold test, Sakae potentiometer |
| 30 | 4910212100F | 2017-10-23 | Report: 02A Performance test Sakae potentiometer |
| 29 | GS0066 | 2017-11-07 | GS0066_MED test Sakae_SIN-COS + XDi 180_0_180_2017_Final |
| 28 | GS0065 | 2017-11-07 | GS0065_MED test Sakae_SIN-COS + XL 180_0_180_2017_Final |
| 27 | GS0012 | 2015-03-19 | Report: GS0012_MED test RTA 600 + XL 45_0_45_Final |
| 26 | GS0005 | 2015-03-16 | Report: GS0005_MED test RTC 600 + XDi 45_0_45_Final |
| 25 | GS0003 | 2015-03-18 | Report: GS0003_MED test RTC 600 + TRI-2 70_0_70_Final |
| 24 | GS0002 | 2015-03-19 | Report: GS0002_MED test RTC 600 + XL 45_0_45_Final |
| 23 | GS0064 | 2015-03-17 | Report: GS0064_MED test EDG 50,72 + TRI-2 70_0_70_Final |
| 22 | GS0061 | 2015-03-20 | Report: GS0061_MED test EDG 50,72 + XL 45_0_45_Final |
| 21 | GS0054 | 2015-03-20 | Report: GS0054_MED test FSG MH620-II + TRI-2 70_0_70_Final |
| 20 | GS0051 | 2015-03-20 | Report: GS0051_MED test FSG MH620-II + XL 45_0_45_Final |

| DNV No | Document Id. | Rev. | Description |
|--------|--------------|------------|--|
| 19 | GS0044 | 2015-03-20 | Report: GS0044_MED test EDG 50,42 + TRI-2 70_0_70_Final |
| 18 | GS0041 | 2015-03-18 | Report: GS0041_MED test EDG 50,42 + XL 45_0_45_Final |
| 17 | GS0033 | 2015-03-18 | Report: GS0033_MED test Contelec Vert X-5151 + XDi 45_0_45_Final |
| 16 | GS0024 | 2015-03-20 | Report: GS0024_MED test Contelec Vert x-37 + TRI-2 70_0_70_Final |
| 15 | GS0023 | 2015-03-18 | Report: GS0023_MED test Contelec Vert X-37 + XDi 45_0_45_Final |
| 14 | GS0022 | 2015-03-19 | Report: GS0022_MED test Contelec Vert X-37 + XL 45_0_45_Final |
| 13 | GS0014 | 2015-03-19 | Report: GS0014_MED test RTA 600 + TRI-2 45_0_45_Final |
| 12 | GS0013 | 2015-03-18 | Report: GS0013_MED test RTA 600 + XDi 45_0_45_Final |
| 10 | | 2014-06-12 | Report: CAN Bus performance test |
| 9 | | 2015-02-18 | Report: CAN Bus performance test (Angle transmitter) |
| 8 | | 2015-03-27 | Report: Test Report Flicker evaluation XDi |
| 6 | | 2013-10-09 | Report: Test report_RAI_GL_xDi_Horn_FSG |
| 5 | | 1.1 | Report: Test of a Maritime navigation and radiocommunication equipment and systems IEC 61162-1/-2 |
| 4 | 4189350049B | B | Manual: Designer's Handbook |
| 3 | 4189350046D | D | XDi quick guide 4189350046 UK |
| 2 | 4921250067D | D | XDi data sheet 4921250067 UK |
| 1 | 4910211100D | 2016-12-16 | Report: EPC 679 XDi Test Data IEC60945 |
| - | Miscs | | E502501-2 dated 05-11-2004; Phoenix Testlab E112540E1 and U112540E1, RT2 20100715JST, Technical Report DNV No. 95-1019 dated 1995-03-01 and IPG 0102 dated 1999-08-23, EMC Test DANAK-1910936 dated 2010-06-21, Test Report no IPA 0322 dated 2010-09-22 |

Tests carried out

- Environmental and EMC testing: IEC 60945 (2002) incl. Corrigendum 1 (2008)
- Interface testing: IEC 61162-1 (2016), IEC 61162-2 Ed. 1.0 (1998)
- Presentation testing: IEC 62288 Ed. 2.0 (2014)
- Performance testing: ISO 20673 (2007)

Note: The DEIF Rudder Angle Indicator System does not issue alerts, hence, testing according to IEC 62923-1/-2 is deemed as not being applicable.

Marking of product

According to IEC 60945, Sect.4.9:

The product to be marked with following information, where practicable:

- Identification of the manufacturer,
- Equipment type number or model identification under which it was type tested,
- Serial number of the unit,
- Compass safe distance.

Alternatively, the marking may be presented on a display at equipment start-up, and in case of fixed equipment compass safe distance may be given in the equipment manual.

END OF CERTIFICATE